

Dimensions of the type, measured in the flesh :—

Head and body 501 mm. ; tail 850 ; hind foot 155 ; ear 40.

Skull—greatest length 105 mm., basal length 75 ; breadth of brain-case 55 ; length of upper cheek-tooth series 23.

Hab. Ituri River, between Mawambi and Avakubi, Upper Congo ; alt. 3000'.

Type. Adult male. B.M. no. 7.1.2.1. Original number 184. Collected 23 October, 1906, by R. E. Dent.

This handsome Monkey is most nearly allied to the W. African *C. campbelli*, but differs by its grizzled olive-yellowish instead of black hind limbs, the absence of black on its posterior back, its more or less greyish-white tail, and by the high and sharply defined line separating the colours of the flanks and belly.

The following papers were read :—

1. On a Collection of Mammals made by Dr. Vassal in Annam. By J. LEWIS BONHOTE, M.A., F.L.S., F.Z.S.*

[Received November 16, 1906.]

(Plate II.† and Text-figures 1, 2.)

The British Museum has recently acquired a most interesting set of Mammals from Annam, collected by Dr. Vassal. The collection contains examples of some twenty-five species, of which five are new to science, while several of the others add considerably to our knowledge (still very limited) of the fauna of the district.

Since the collections made by MM. Pierre and Mouhot over half a century ago, practically no fresh material has reached Europe from that locality. As would therefore be expected, many of the forms are undescribed, and there is little doubt that with further material many of the forms at present included under existing names will prove to be subspecifically distinct.

The collection is, perhaps, too small for any generalisation on the fauna of Annam, but its affinities seem if anything to tend towards China rather than the Malay Peninsula, and it is especially noteworthy that it differs considerably from the fauna of Siam. Lest I am misunderstood, I may as well point out that by "fauna" I am not referring to the presence or absence of certain genera, but rather to the fact that the local forms of widely spread species approximate rather to the Chinese than to the Malayan. To give some examples:—The Porcupine is Anderson's *Hystrix yunnanensis*, not *H. grotei* from the Peninsula. The *Petaurista* is Anderson's *P. yunnanensis*, and not *P. lylei*, mihi, from Siam. The new *Tupaia* described has its affinities with *T. chinensis* and

* [The complete account of the new species described in this communication appears here ; but since the names and preliminary diagnoses were published in the 'Abstract,' such species are distinguished by the name being underlined.—EDITOR.]

† For explanation of the Plate, see p. 11.

not with *T. ferruginea*. On the other hand, the *Paradoxurus* is apparently identical with a form described by me from the Peninsula. Another point of interest as showing a probable double origin for this fauna, is in the occurrence at the same place of two subspecies of *Sciurus maccllelandi*—one, *S. m. rodolphi* A. M.-E., showing very obvious affinities with *S. m. barbei* of the Peninsula; the other, *S. m. maritimus* mihi, which is indistinguishable from the type, which came from China. It must, however, be remembered that this last is only represented by a single skin, and it might possibly have been brought down on a ship and escaped.

Lastly, attention may be called to a new species of *Nycticebus*, which is in many respects intermediate in its characters between *Nycticebus* and *Loris*.

As regards synonymy, I have followed my usual custom, namely, to give the original reference and a few of the other more important ones, which, if referred to, will be found to contain a practically full synonymy.

PRESBYTES NIGRIPES (A. M.-E.).

Semnopithecus nigripes A. M.-Edw. Nouv. Arch. du Mus. vol. vi., Bull. p. 7, pl. 1 (1871); Blyth, J. A. S. B. xliv. ex. no. p. 11 (1875); Anders. Zool. Res. p. 41 (1879).

a. ♂ ad. Bali, alt. 250 m., 10th Nov., 1905.

This is an extremely fine example of this scarce species, agreeing very well with the published descriptions.

PRESBYTES sp. ?

a, b. ♀. Nha-trang, 30th Oct., 1905.

Two very young specimens of a species of *Presbytes*, unfortunately too young for identification.

NYCTICEBUS PYGMÆUS Bonh. (Plate II.)

Abstr. P. Z. S. 1907, p. 2 (Jan. 22, 1907).

Very small, about half the size of *N. coucang** Bodd. The hair is wavy on the body and of a very fine silky texture. General colour of a uniform orange-rufous, showing no sign of any dark line down the back or on the head. The under parts, hands, and feet are lighter in colour and have a silvery-grey appearance. There is a bare space round the eyes, the muzzle and lips are white, and a white stripe runs up from the nose between the eyes to end abruptly on the forehead. The ears are of moderate size, uniformly rounded, and very sparsely covered with hairs. The tail is a mere stump.

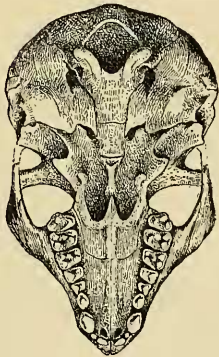
The *skull* in its general outline agrees fairly well with that of *N. c. cinereus* from Cochin China, although it is, of course, very much smaller. In its main characters also it shows no very

* Messrs. Stone and Rehn have pointed out (Proc. Acad. Nat. Sci. Phil. 1902, p. 138) that the name *tardigradus* belongs to the Slender Loris "*L. gracilis*," and that therefore Boddaert's name must stand for the Slow Loris usually known as *N. tardigradus*.

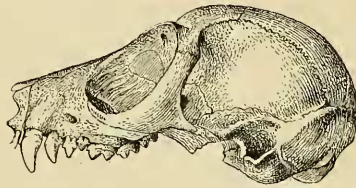
distinctive points. The molars, however, are conspicuously different, and enable this species to be easily diagnosed. In *N. cinereus* the first molar is the largest, and the last or third molar is small and almost quadrilateral in shape. In the present species, however, the *second* molar is the largest, while the third molar is triangular in outline and not very much smaller than the first molar. In the lower jaw similar conditions obtain, the three molars are all subequal, the third being slightly the largest, whereas in *N. cinereus* the last molar in the lower jaw is very markedly smaller than either of the other two.

Dimensions of type from skin (approx.). Head and body 190 mm.; tail 10.

Text-fig. 1.



Text-fig. 2.

Text-fig. 1.—Palatal view of skull of *Nycticebus pygmaeus*.Text-fig. 2.—Lateral view of skull of *Nycticebus pygmaeus*.

Skull. Greatest length 46 mm.; basal length 38; palatal length 17.5; zygomatic breadth 27; interorbital breadth 3; greatest breadth of brain-case 25; length from palate to lower margin of foramen magnum 17.5; breadth of basioccipital at its anterior end 3.7; length of molar series 14.

Hab. Nha-trang, Annam.

Type. B.M. 6.11.6.2. ♂. Collected by¹ Dr. Vassal on the 13th Nov., 1905.

The small size and peculiar character of the teeth will prevent this species from being confounded with any others at present known to exist. Only a single specimen (the type) has been sent, which is quite adult but not old. It may be noted that in some respects the teeth tend to approach those in *Loris*, in which the second upper molar is larger than the first. In the shape of the premaxilla also the present species shows a tendency, albeit very slight, to approach *Loris* by showing its flat surface laterally instead of anteriorly. Externally the blaze between the eyes and its small size are features belonging to *Loris*, but in the length of its limbs and general build it is a true *Nycticebus*.

FELIS sp. ?

- a. Flat skin with no data of a Cat belonging apparently to the *Felis bengalensis* group.

VIVERRA MEGASPILA Blyth.

Viverra megaspila Blyth, J. A. S. B. xxxi. p. 331 (1862).

- a. Nambon, Annam.

A fine adult specimen with well-marked and clear-cut spots.

VIVERRICULA MALACCENSIS (Gmel.).

Viverra malaccensis Gmel., Linn. Syst. Nat. i. p. 92 (1788); Gray, P. Z. S. 1861, p. 136.

Viverricula malaccensis (Gmel.), Bonhote, Ann. & Mag. N. H. ser. 7, vol. i. p. 118 (1898).

- a. Imm. No data.

PARADOXURUS MINOR Bonh.

Paradoxurus minor Bonh. Fasci. Mal., Zool. i. p. 9 (1903).

- a, b. ♀ imm. Bali, Annam, 250 m., 10th Nov., 1905.

These are both very young specimens, which agree closely with the type.

HERPESTES EXILIS Gerv.

Herpestes exilis Gerv. Zool. de la Bonite, p. 32 (1841); Gray, P. Z. S. 1864, p. 555.

Herpestes javanicus (Geoff.), Anders. Zool. Res. p. 185 (1879).

Herpestes rutilus Gray, P. Z. S. 1861, p. 136.

Calogale rutilus Gray, P. Z. S. 1864, p. 561.

- a, b. ♀. Nha-trang, 26th Dec., 1905.

I have carefully compared these specimens with some from Siam and others from Cochin China, among them Gray's type of *H. rutilus*. The Cochin China and Annam specimens are all very like each other, and differ in their much redder colour from Siamese specimens. They also differ in their much deeper colour from Javan specimens. Gervais's type of *H. exilis* came from Cochin China, and as his description agrees fairly well with these fresh specimens, his name of *H. exilis*, which antedates Gray's, must stand.

The skulls of *H. exilis*, although very similar to those from Siam and Java, are larger and more robust. The Siamese animal is apparently intermediate between *H. birmanicus* and *H. exilis*.

The following is a description of the present specimens:—General colour rufous, punctulated with white. Each hair is black, with three or four buff or rufous annulations. The distal annulations and generally the tip of each hair are rufous, while along the centre of the back, the head, cheeks, and tail these rufous annulations are deeper in colour and more marked, causing the animal to appear quite red along those areas. The under parts are more sparsely covered with hairs and the annulations

yellowish rather than rufous, except under the chin and at the root of the tail. The hairs of the tail, more especially underneath and at the sides, have long rufous tips.

Dimensions (of Nha-trang specimen, ad. ♀ in flesh). Head and body 364 mm.; tail 284; ear 28.

Skull. Greatest length 78 mm.; basal length 75; zygomatic breadth 39; palatal length 41; greatest diameter of carnassial 8.

HELICTIS PIERREI Bonh.

Helictis pierrei Bonhote, Ann. & Mag. Nat. Hist. ser. 7, vol. xii. p. 592 (1903).

a. Imm. Nha-trang, Annam.

b. Imm. skull only.

The single skin and skull are too immature to show the distinctive characters to any marked extent.

TUPAIA CONCOLOR Bonh.

Abstr. P. Z. S. 1907, p. 2 (Jan. 22, 1907).

Similar in general colouring to *Tupaia belangeri*. The whole of the upper parts are of a uniform grizzled greyish-green, each hair being dark at its base and having one or more buff annulations and a dark tip. One of the most distinctive features is the absence of the neck-stripe, so universal among the other species of this genus. An extremely faint trace of it only is to be made out on the shoulders, but so faint is it that unless special search be made it is liable to be overlooked. The tail, which is markedly distichous, is concolorous with the upper parts, and extremely thick and bushy. The under parts are somewhat sparsely clothed with hair; the chin, throat, and breast are uniformly yellow, while on the other portions the hairs are annulated as on the upper parts. The bases of the hairs on the under side of the tail are light.

Skull. In its general character resembles that of *T. belangeri*; it is, however, slightly larger and with a longer and narrower snout, in other respects it does not show any marked features.

Dimensions of type (from skin). Head and body 220 mm.; tail 140; ear 15; hind foot 45.

Skull. Greatest length 54 mm.; basal length 47; zygomatic breadth 29; palatal length 27; breadth of skull immediately behind postorbital processes 17.

Type. B.M. 6.11.5.3. ♂ ad. Collected by Dr. Vassal, 22nd March, 1906.

Hab. Annam.

Although very closely allied to *Tupaia belangeri* this species may easily be distinguished by its larger size, much thicker tail, and the absence of the light neck-stripe. Two specimens agreeing in all respects were brought back by Dr. Vassal. *Tupaia chinensis*, described by Dr. Anderson from Yunnan and which is found in Siam, is rather smaller than *T. belangeri* and consequently quite distinct from the present form.

DENDROGALE FRENATA Gray.

Tupaia frenata Gray, Ann. & Mag. Nat. Hist. ser. 3, vol. vi. p. 217 (1860).

Dendrogale frenata Anders. Zool. Res. p. 110, pl. 7. figs. 20, 21 (1879).

a, b.

Two very typical examples.

CYNOPTERUS SPHINX (Vahl).

Vespertilio sphinx Vahl, Skrivter af Naturhistorie-Selskabet, 4te Band, 1ste Heft, p. 123 (1797).

Cynopterus sphinx (Vahl), Bonh. P. Z. S. 1902, vol. i. p. 38; id. Fasci. Mal., Zool. pt. i. p. 14 (1903).

a. ♂. Nha-trang, Annam, 13th Nov., 1905.

SCOTOPHILUS KUHLLI Leach.

Scotophilus kuhlii Leach, Trans. Linn. Soc. xiii. p. 71 (1822).

a, b. ♂. Nha-trang, 10th Oct., 1905.

PETAURISTA YUNNANENSIS (Anders.).

Pteromys yunnanensis Anders. Zool. Res. p. 282, pl. xxii. (1879).

a. ♂ ad. Bali, Annam, 150 m., 10th Nov., 1905.

This individual agrees very well with Dr. Anderson's description and plate (quoted above), and I have no alternative but to place it under his name. At the same time it should be noted that the typical locality of *P. yunnanensis* is considerably to the north and that another form of this same species, *P. lylei* mihi, is found in Siam. It would therefore appear as if the present race was in reality a Chinese form and that Annam and Yunnan form its western limit. Except for the parachute the hairs of the whole of the back in this individual are tipped with white, but not sufficiently so as to conceal the chestnut ground-colour.

P. lylei is much darker in general coloration than this species and the anterior portion of the outer side of the ear is a bright and pure chestnut.

P. yunnanensis and *P. lylei* belong to a large group, of which there are many geographical forms. Until, however, the group is worked out as a whole, it is best to retain them under binomial names, but it should be borne in mind that they are merely geographical forms of a large and widely distributed species.

SCIURUS GRISEIMANUS A. M.-E.

Sciurus griseimanus A. M.-Edw. Rev. Zool. 1867, p. 195; Bonh. Ann. & Mag. Nat. Hist. ser. 7, vol. vii. p. 274 (1901).

a-d. 3 ♂, ♀. Nha-trang, Annam, 26th Dec., 1905.

e. Nha-trang, Annam, Nov. 1905.

f-k. 3 ♂, 2 ♀. Hoah Khat, Annam, 26th Dec., 1905.

l-n. 2 ♂, ♀. Ninh Hoa, 25th Dec., 1905.

o-p. ♂ ♀. Bali, Annam, 250 m. alt., 26th Dec., 1905.

The present species and *S. leucopus** of Gray have hitherto been confounded and considered as one and the same species. The

* *Macroxus leucopus* Gray, Ann. & Mag. N. H. ser. 3, xx. p. 282 (1867).

present series, however, shows that they are really quite good and distinct species. The most obvious difference is in the colour of the under parts. In *S. griseimanus* they are deep chestnut and the line of demarcation between the upper and under parts is sharply divided. In *S. leucopus*, on the other hand, the colour of the under parts is of a pale rufous buff, which shades gradually into the grizzled grey of the back. M. Milne-Edwards in his original description of *S. griseimanus* distinctly states that the colour of the under parts is deep chestnut, though females and young males are sometimes considerably lighter. This enables us to fix M. Milne-Edwards's name on the chestnut-bellied form without hesitation. In the present series the colour of the under parts is very deep chestnut and shows but little variation; the two examples from Bali, at an altitude of 250 metres, are, however, much lighter below, and it may be that these lighter individuals represent a mountain race of *S. griseimanus*, but our material is at present too scanty to settle that question.

S. leucopus differs still further from *S. griseimanus* in the annulations on the hairs of the back being yellower and not of such a clear grey, thus giving the animal a darker appearance. The colour of the under parts also extends over the outer sides of the limbs and is especially noticeable on the thighs.

*SCIURUS LEUCOPUS FUMIGATUS** Bonh.

Abstr. P. Z. S. 1907, p. 2 (Jan. 22, 1907).

General colour above similar to that of *S. leucopus*, but darker (see preceding species). Each hair is very dark, with three or four yellowish annulations. The tail, which is indistinctly barred, is similar in colour to the body, but the annulations are of a slightly deeper tint. Hands and feet dirty yellowish white grizzled with darker. Under parts and inner sides of the limbs pale reddish buff, with the exception of the chin and throat which are grizzled like the back.

The *skulls* available are so imperfect that a description is not possible.

Dimensions of type (from skin). Head and body 190 mm.; tail 175; ear 17; hind foot 52.

Hab. Ninh Hoa, Annam.

Type. B.M. 6.11.6.25. Collected on the 10th Nov., 1905, by Dr. Vassal.

This species is easily distinguished from *S. leucopus typicus* by its darker colour above, grizzled hands and feet, and by the outer sides of the limbs being similar in colour to the rest of the upper parts. Whereas the typical *S. leucopus* is greyer, the outer sides of the limbs are buff, and the hands and feet pure yellowish white.

SCIURUS MACCLELLANDI MARITIMUS Bonh.

Sciurus macclellandi maritimus Bonh. Ann. & Mag. Nat. Hist. ser. 7, vol. iv. p. 51 (1899).

* Since the reading of this paper it has been pointed out to me that the name "*fumigatus*" is preoccupied, having been used by Gray in 1867. I therefore propose to rename this squirrel *Sciurus cassali*.

a. ♂. One specimen, 10th Nov., 1905.

A single example of this Chinese race has been brought back; it resembles the type closely and in all respects. The occurrence of this form in Annam is certainly surprising; it may, however, prove to range along the whole S. Chinese coast, while *S. rodolphi* inhabits the higher ground; on the other hand it might have been brought over on a ship and escaped.

SCIURUS MACCLELLANDI RODOLPHI A. M.-E.

Sciurus rodolphi A. Milne-Edwards, Rev. et Mag. de Zool. xix. p. 227 (1867); id. Rech. Mamm. p. 162 (1871).

Sciurus maclellandi rodolphi A. M.-E., Bonh. Ann. & Mag. Nat. Hist. ser. 7, vol. iv. p. 54 (1899).

a-c. Three specimens.

These are very typical specimens. The light stripes are of the same width throughout, and have a tendency to a deeper and more rufous tinge on their anterior portion. The median dark stripe tends to become divided down the centre by a brownish grizzled stripe; the length and extent of this latter stripe seem to be very variable.

FUNAMBULUS BERDMOREI (Blyth).

Sciurus bermorei Blyth, J. A. S. B. xvii. p. 63 (1849); Anders. Zool. Res. p. 261 (1879).

Funambulus bermorei (Blyth), Bonh. P. Z. S. 1901, vol. i. p. 56.

a, b. Bali, Annam, 10th Nov., 1905.

S. mouhoti Gray was merely described on a seasonal form of this species, as I have already pointed out.

FUNAMBULUS RUFIGENIS FUSCUS Bonh.

Abstr. P. Z. S. 1907, p. 2 (Jan. 22, 1907).

Similar to *F. rufigenis typicus*, but the general tone of colour very much deeper. Colour above very dark brown, finely grizzled with buff. The whole of the thighs suffused with deep chestnut, which is not the case in the typical form. Sides of face chestnut, rather deeper in tint than in the typical form, and the same may be said of the chestnut on the under side of the tail. Remainder of under parts creamy white.

The *skull* appears to be of a rather stouter build, but without a good series it would be unwise to lay stress on this fact.

Dimensions of type (from skin). Head and body 190 mm.; tail (broken) 150; ear 12.5; hind foot 43.

Hab. Bali, Annam, 250 m. alt.

Type. B.M. 6.11.6.28. Collected by Dr. Vassal on the 10th Nov., 1905.

The much darker general colour and the rufous tinge on the outer sides of the thighs form good distinctive characters by which this species may be easily distinguished from the typical race.

RHIZOMYS PRUINOSUS Blyth.

Rhizomys pruinosus Blyth, J. A. S. B. xx. p. 519 (1851); id.

Cat. Mamm. As. Soc. Bengal, p. 122 (1863); Anders. Zool. Res. p. 325 (1879).

a. Plateau of the Lung Brau, 1300 m., 30th Oct., 1905.

This specimen is only a flat skin without a skull; Dr. Vassali notes that it is "not rare" in Annam.

HYSTRIX YUNNANENSIS Anders.

Hystrix yunnanensis Anders. Zool. Res. p. 332 (1879).

a. ♀ imm. Ninh Hoa, 25th Dec., 1905.

This is a very young specimen, but has a well-developed nuchal crest. The skull in its general proportions agrees with Dr. Anderson's description. The external characters, however, agree well with Swinhoe's *H. subcristata*, and, in fact, the only difference between these two species is to be found in the skulls. In his original description Swinhoe states that the skull of *H. subcristata* is indistinguishable from that of *H. hodgsoni* Gray, which, of course, is quite distinct from Anderson's species. Unfortunately there are no specimens from China in the British Museum which would enable us to determine definitely whether there be two Crested Porcupines in China, or whether Anderson's and Swinhoe's species are in reality one and the same.

LEPUS VASSALI Thos.

Lepus vassali Thos. Ann. & Mag. Nat. Hist. ser. 7, vol. xvii. p. 425 (1906).

a. ♀. Nha-trang, Annam, 25th Dec., 1905.

Mr. Thomas having recently described this specimen, I need only refer those interested to the paper quoted above.

TRAGULUS KANCHIL AFFINIS Gray.

Tragulus affinis Gray, P. Z. S. 1861, p. 138.

Tragulus kanchil pierreii Bonh. Ann. & Mag. Nat. Hist. ser. 7, vol. xi. p. 293 (1903, 1st March).

a-c. ♂. Nha-trang, 22nd March, 1906.

These specimens agree in all respects with my description of *T. k. pierreii* quoted above. I have used Gray's name for this species in preference to my own, as Mr. Miller has pointed out to me that Gray's *T. affinis* was chiefly based on specimens from Cochin China; and Mr. Miller having, previously to my paper, described the Peninsula form under the name *T. rucus*, Gray's *T. affinis* became *ipso facto* restricted to the race from Cochin China: with this finding I quite agree.

MANIS JAVANICA.

Manis javanica Desm. Mamm. p. 377 (1820); Anders. Zool. Res. p. 352 (1879).

a. Dang-trang, near Nha-trang, 25th Dec., 1905.

EXPLANATION OF PLATE II.

Nycticebus pygmaeus, p. 4.